

DESCRIPTIONS OF A NEW VARIETY AND FIVE NEW SPECIES
OF NEW ZEALAND LAND MOLLUSCA.

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PLATE XV.

1. ENDODONTA (CHAROPA) OTAGOENSIS, n.sp. Pl. XV, Fig. 1.

Shell small, discoidal, broadly umbilicated, fragile, semi-transparent, ribbed, not shining, yellowish-white with irregular reddish-brown streaks, forming mostly zigzag lines; spire flat; whorls 5, the first three very slowly, the others more rapidly increasing, convex; the protoconch of $1\frac{1}{2}$ volutions, whitish, microscopically striate, the other whorls with equidistant, rounded, oblique riblets, about 11 per millim., the interstices with microscopic lines of growth, no spiral striæ; suture deep, periphery rounded; aperture oblique, rotundly lunar, extremities converging, peristome thin, upper margin rapidly advancing, then turning down with a slight concave sinuation, columellar lip regularly arched, callous, and very little expanded towards the umbilicus, which is broad and perspective, about $\frac{1}{3}$ of the greatest diameter; base convex. Diam. maj. 6, min. 5.25 mm.; alt. 2.5 mm.; diam. of umbilicus 2 mm.

Hab.—In the native bush near Dunedin, under pieces of rotten wood. (H. S.)

Type in my collection.

E. Otagoensis is nearest allied to *E. tapirina*, Hutton, and *E. Colensoi*, mihi, but it is larger, and the riblets are more numerous than in both the species mentioned. *E. tapirina* has about 9 riblets per mm.; which are sharp, elevated, every third or fourth riblet being higher than the others, a peculiarity which is characteristic of the species; it is also non-decussate. *E. Colensoi* has 8 to 9 riblets per mm., and the interstices are microscopically decussate.

2. ENDODONTA (CHAROPA) SUBINFECTA, n.sp. Pl. XV, Fig. 2.

Shell very small, subdiscoidal, broadly umbilicated, thin, semi-transparent, ribbed, not shining, yellowish-white with rufous patches above, forming indistinct zigzag bands towards the base; spire almost flat; whorls 5, the first three very narrow, the others more rapidly increasing, the last slightly descending in front, convex; the white protoconch formed by $1\frac{1}{2}$ whorls, which are microscopically striate, the other whorls are adorned with equidistant, oblique, sharp, and rather elevated riblets, about 8 per millim., the interstices microscopically decussate; suture deep; periphery rounded; aperture

oblique, rotundly lunar; peristome thin, sharp, extremities converging, the upper lip slightly advancing, columellar lip regularly arched, slightly callous and expanded; umbilicus broad and perspective, about $\frac{1}{3}$ of the greatest diameter; base convex. Diam. 3, alt. 1.5 mm.; diam. of umbilicus 1.1 mm.

Hab.—Riccarton Bush, near Christchurch (H. S.). Pelorus Valley, Marlborough (J. McMahon).

Type in my collection.

It is very easy to mistake this species for *E. infecta*, Reeve, if it be not carefully examined. The latter is distinguished from it by the following characters, which at the same time will help to complete its diagnosis:—It is somewhat larger, the greater diam. being 3.5 mm., the riblets are closer, about 10 per mm., the interstices are not decussate, the last whorl on approaching the mouth is first a little narrowed over a short distance, and then slightly widened, or inflated, thus giving the shell an oval shape when seen from above; the upper margin of the peristome rapidly advancing and tapering, the outer lip with a concave sinuation, the umbilicus is broader, in proportion of 1 : 2.5 of the greatest diameter, 1 : 2.7 in *E. subinfecta*.

3. FLAMMULINA (PYRRHA) VIRESCENS, n.sp. Pl. XV, Figs. 3-7.

Shell (Figs. 3-3b) small, globosely depressed, perforate, faintly shining, horn-coloured with a greenish hue, which is more distinct at the base, thin, semi-transparent; spire low, convex; whorls $4\frac{1}{2}$, the first three slowly, the remainder more rapidly increasing; protoconch of $1\frac{1}{2}$ whorls, microscopically decussate, whorls flatly convex, somewhat irregularly striulate, with microscopic, narrow, distinct striæ; periphery rounded, subangled in young specimens; suture impressed; aperture transverse, oblique, broadly rotundly lunar, peristome simple, extremities distant, subconvergent, united by a faint callosity; columella vertical for a short distance, reflexed above towards the deep, narrow perforation, and partly covering it; base convex, more shining than the upper surface. Diam. maj. 9, min. 7.5 mm.; alt. 5.5 mm.; diam. of perforation 0.5 mm.

Hab.—At the foot of Mt. Stokes, Marlborough, South Island. (J. McMahon.)

Type in my collection.

From *F. cressida*, Hutt., it may at once be distinguished by its much smaller size and different colour; from *F. subincarnata*, mihi, by the much fainter radiate striæ, the presence of microscopic decussation, the rounded periphery in the adult, etc.

Animal with a well-developed caudal gland (Fig. 6).

Jaw (Fig. 4) slightly arcuate, narrower in the middle, very thin, consisting of about 45 narrow straight plaits, lying close together, which are finely longitudinally striate and indent the cutting edge. It agrees with the jaws of the other two known species.

Radula (Fig. 5) has the formula 23 : 10 : 1 : 10 : 23. The rachidian tooth is long and narrow; reflected portion short, tricuspid, covering about one-third of the basal plate; the median cusp is short,

broad, with a small rounded mesocone, the lateral cusps are minute. The admedians (Nos. 1-10) have a short, broad inner cusp, with short rounded cone, and a small outer cusp. In the succeeding laterals (Nos. 11-16), the inner cusp is strong and broad, becoming (No. 16) as long as the basal plate; the outer cusp, though larger than in the preceding ones, is still small. The marginals that follow (Nos. 17-32) are tricuspid, with broad, short basal plate, the mesodont at first flanked by a narrow, sharp endodont, and at a wider interval by a small ectodont, gradually the endodont and mesodont coalesce, till they finally form a single bifid denticle, with a small separate ectodont. The last tooth of the series (No. 33) is minute, quadrate, with a single small denticle.

Reproductive organs (Fig. 7). There is a long vestibule, the penis is stout, broad, somewhat enlarged below the middle, constricted above it, the distal end is flatly convex, the retractor muscle is inserted at the anterior side of the distal portion, whilst on the posterior end the vas deferens enters. A rather long distance from the juncture of the penis with the vestibule, on the opposite side, the long, subcylindrical receptaculum seminis arises; this tapers off at its extremity and forms a rather long, filiform cæcum, slightly globular at its end. The most interesting feature in these reproductive organs is the fan-shaped, radially grooved appendiculum just opposite the receptaculum seminis. In no other genus of New Zealand land mollusca have I come across this interesting organ, although it is known to occur in some Australian forms; in these, however, it is of a different shape, forming only a long, cylindrical sac. I have not had an opportunity of dissecting the two other species of *Pyrrha*, and am therefore unable to say whether the appendiculum is a constant character of the subgenus. Since, however, in their shells and their dentition the three species closely resemble one another, it is but fair to presume that a similar appendiculum is present in all.

4. FLAMMULINA (PHACUSSA) FULMINATA, Hutton, var. COSTATA, n. var.

Pl. XV, Figs. 8 & 9.

This variety differs from the type in its somewhat larger size, in being costate, and in having mostly a different colour pattern. The protoconch is microscopically radiately striate, the other whorls have subequidistant low riblets, 4 to 5 per mm., between them are minute lines of growth, which are decussated by spiral striæ. The species, which is only finely striate, is also microscopically decussate, a feature not mentioned by Hutton. Of the six specimens (all of them more or less damaged) only one shows the reddish-brown longitudinal zigzag bands, the others having only broad, oblique streaks of the same colour. The number of whorls is the same in both. Diam. maj. 12, min. 11 mm.; alt. 7 mm.

Hab.—Resolution Island. I owe the specimens to the kindness of Mr. R. Henry, caretaker of this reserve for the New Zealand fauna.

Type in my collection.

No figures of *F. fulminata* having ever been published, I take this opportunity of giving some (Figs. 8-8*b*) after a specimen in my collection from Stewart Island.

Animal with a distinct caudal pore.

Jaw the same as in the other species of *Phacussa*.

Radula has the formula 25 : 15 : 1 : 15 : 25, having four more teeth in each transverse row than the type, as described and figured by Capt. Hutton, but otherwise the teeth are very much of the same character. The central tooth is tricuspid, with the side cusps minute, the laterals lack the entocone, the mesocone being large, these are followed by four transitional teeth, and there are 21 marginals with an oblique mesocone only.

The *Reproductive organs* (Fig. 9) are very simple. The penis is broadest at its distal end, at the outer end the retractor muscle is inserted, and opposite to it the vas deferens enters. The free oviduct is long and cylindrical, and on the side towards the male organ the oblong receptaculum seminis, with a short distal cæcum, takes its origin a little above the vestibule.

In *Phacussa hypopolia*, Pfr., the genital organs are very similar.

5. FLAMMULINA (PHACUSSA) HENRYI, n.sp. Pl. XV, Figs. 10-13.

Shell (Figs. 10-10*b*) subdiscoidal, umbilicated, with a low depressed conical spire, uniformly light brown, not shining, rather thin, costulate; whorls 5, first slowly and then more rapidly increasing; protoconch of $1\frac{1}{2}$ whorls faintly microscopically decussate, the other whorls with sharp, subequidistant riblets, about 3 per mm., the interstices microscopically decussated by numerous incremental and spiral striæ; the $1\frac{1}{2}$ whorls following the protoconch are sometimes ornamented with rufous zigzag lines; suture impressed; periphery rounded; aperture oblique, broadly rotundly lunar, peristome simple, with a slight callus inside, that is more pronounced on the columellar lip, which is reflexed towards the umbilicus; the latter is narrow, open, deep, showing two volutions, umbilical region whitish; base convex. Diam. maj. 10, min. 8.8 mm.; alt. 5.5 mm.; diam. of umbilicus 1.5 mm.

Hab.—Resolution Island.

Type in my collection.

I have much pleasure in naming this species after Mr. R. Henry, of Resolution Island, who so very kindly collected a number of shells on this hitherto conchologically unexplored island.

Animal with parapodial groove and small caudal pore.

Jaw (Fig. 11) consisting of numerous vertical, finely longitudinally striated plaits. The figure shows the jaw in the form it had when separated from the buccal mass.

Radula (Fig. 12) has the formula 24 : 6 : 1 : 6 : 24. The central tooth has a short, heart-shaped reflected portion, with a wide mesocone, not extending to the margin of the basal plate, no side cusps. The admedians have a strong, stout mesocone, at first vertical, but becoming ultimately very oblique and directed inwards, and

a minute ectocone; then follow five transitional teeth with basal plates, increasing in size, with small reflected portion and an aculeate mesocone gradually becoming narrower. Finally, there are 19 true marginals, having a small quadrate basal plate, to the inner side of which is attached a long, aculeate mesocone with a short projection above.

This species is nearest to *F. Helmsi*, Hutton, but has much more remote costæ and a wider umbilicus. From *F. fulminata costata* it is distinguished by the more distant and sharp riblets, and the much wider umbilicus.

6. PARYPHANTA EDWARDI, n.sp. Pl. XV, Figs. 14, 15.

Shell (Fig. 14)¹ large, subdiscoidal, umbilicated, brownish-black, submembranaceous, shining; spire low, broadly conoidal; whorls $3\frac{1}{2}$, rapidly increasing, flatly convex; protoconch of $1\frac{1}{2}$ whorls, almost smooth, but faintly radiately striated, light brown, the following whorl darker, malleated, the last whorl somewhat irregularly obliquely plaited in the direction of the growth-lines, crossed at right angles by more or less distinct shallow furrows; suture impressed; aperture oblique, oval, but little excavated by the penultimate whorl, shining within, and of a dark bluish tint, peristome thickened by the overlapping epidermis, columellar lip oblique, but very little expanded above, extremities converging, united by a very thin callosity on the penultimate whorl. Umbilicus pervious, moderate, deep, about $\frac{1}{3}$ of the minor diameter. Base smoother than the upper surface and more shining, convex. Diam. maj. 30, min 25 mm.; alt. 20 mm.

Hab.—Hossack Downs, Canterbury, where it was found by my son, in whose honour the species is named.

Type in my collection.

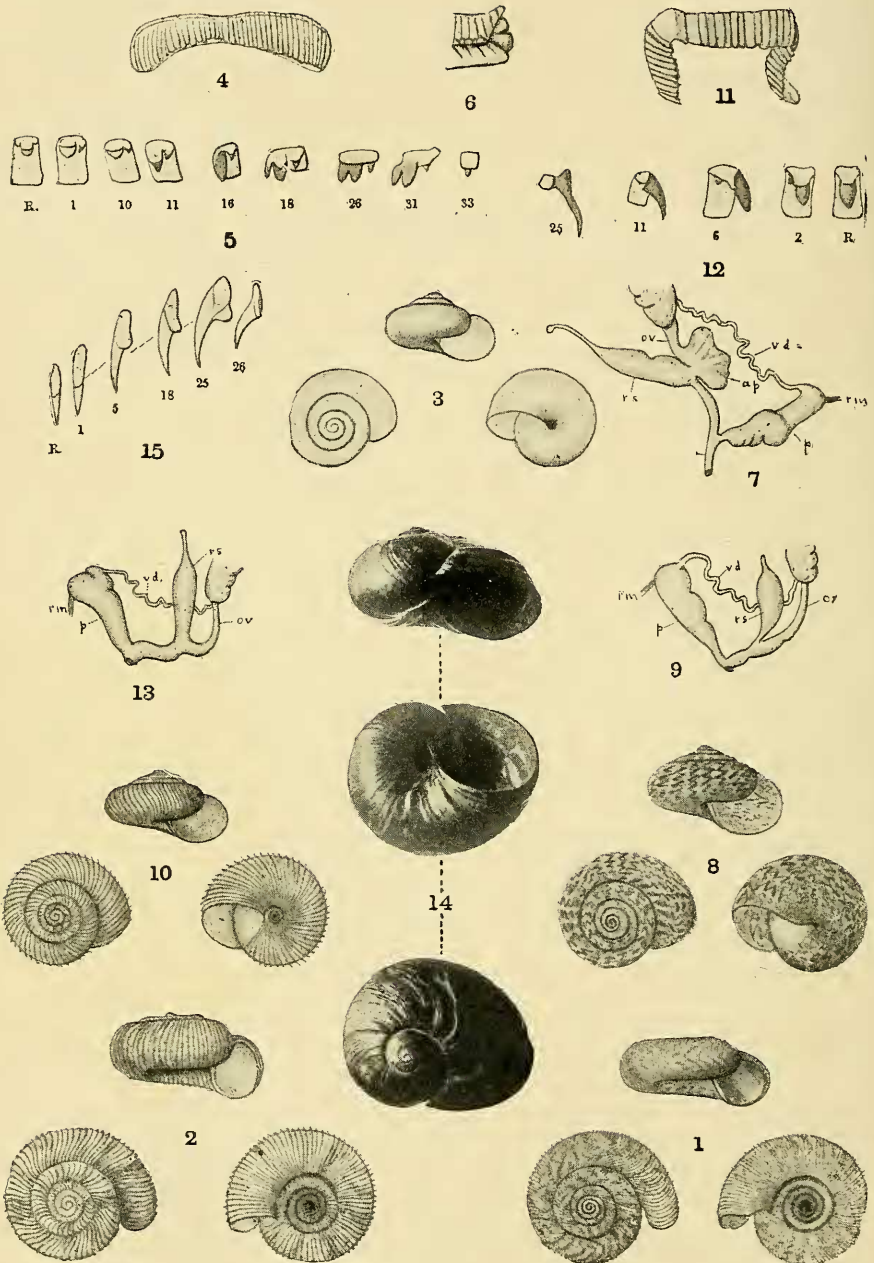
This species stands nearest to *P. atramentaria*, Shuttl., from Victoria, but is at once distinguished from it by the much more rapidly increasing whorls, the last occupying nearly $\frac{2}{3}$ of the greater diameter, and by its wider umbilicus.

Radula (Fig. 15) has the formula 26 : 1 : 26. The aculeate teeth increase in size from the centre to the margin, except the last one, which is smaller. The rachidian tooth is short and with straight sides, the five following teeth are similar but longer, they then take on a more and more triangular shape.

The radula of *P. atramentaria* has the formula 50 : 1 : 50, the teeth increasing in size from the middle to about the 15th, thence getting slowly shorter towards the margins.

The only specimen I have contained the dried-up animal, thus enabling me to prepare the radula, but leaving no chance for examining the reproductive organs.

¹ For the photographs I am indebted to Capt. F. W. Hutton, F.R.S., etc., and they were taken by Mr. W. Sparkes, taxidermist in the Canterbury Museum.



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